

# MOROCCO AND WESTERN SAHARA

By Philip M. Mobbs

Morocco and Western Sahara were the world's third largest producer of phosphate rock after the United States and China (Jasinski, 2001). In 1999, Morocco, which was the world's foremost exporter of phosphate rock and phosphoric acid, exported 11.3 million metric tons (Mt) of rock and 1.7 Mt of phosphoric acid. By order of volume, the United States, Spain, and Mexico were the principal phosphate rock markets, and India was Morocco's main phosphoric acid market (Direction des Mines, 2000, Annexes 9-10). Morocco also produced a wide range of minerals, which included antimony, barite, coal, cobalt, copper, fluor spar, gold, iron ore, lead, manganese, salt, silver, and zinc, and had a significant capacity for conversion of phosphate rock into fertilizer. The mineral industry was Morocco's largest foreign-exchange-earning sector.

Cie. Minière de Seksaoua and Sté. Nord Africaine de Recherches et d'Exploitation des Mines d'Argana formed a joint venture to develop the Seksaoua copper deposit. Development costs for a proposed copper mine and plant were estimated to be more than \$40 million<sup>1</sup> (Middle East Economic Digest, 1999b). Holding Minier du Groupe ONA (Managem) announced that it would develop the gold deposit at Akka. After an initial evaluation, Managem and Bureau de Recherches et de Participations Minières estimated that the deposit's reserves were 30 metric tons of gold. Development costs were estimated to be \$50 million (Middle East Economic Digest, 1999a).

The Sté. Nationale de Sidérurgie was proceeding with plans to build a 300,000-metric-ton-per-year (t/yr)-capacity rolling mill at Jorf Lasfar to supplement output from its 480,000-t/yr rolling mill at Nador (Metal Bulletin, 2000).

In the cement sector, Sté. Ciments de l'Orient was evaluating the feasibility of building a 1-million-metric-ton-per-year-capacity cement plant in the Settat area. Lafarge Maroc proposed to build a \$134 million 600,000-t/yr-capacity clinker grinder at Meknes (Middle East Economic Digest, 1999c; Morocco Today, November 25, 1999, Lafarge Cement competing aggressively in domestic market, accessed January 19, 2001, at URL <http://www.morocco-today.com/mtbus.htm>).

Sté. Maroco Italienne Minerais de Tafraout (Smimtaf) announced that it was funding the \$408,000 development of a feldspar mine about 200 kilometers southeast of Agadir. Smimtaf estimated that the production capacity of the mine would be 5,000 to 10,000 t/yr (Industrial Minerals, 1999).

In 1999, about 18 petroleum exploration or prospecting licenses in force were held by the state-owned Office National

de Recherches & d'Exploitations Petrolieres (Onarep) or by joint ventures of Onarep and international companies, which included Enterprise Oil Exploration Ltd. of the United Kingdom, Kappa Energy Co. of Canada (formerly Cabre Exploration Ltd.), Lasmo Overseas Nederland (II) B.V., Roc Oil Co. of Australia, Shell Prospecting Africa B.V., Skidmore Energy Inc. of the United States, Taurus Petroleum AB of Sweden, and Vanco Energy Co. of the United States (Arab Petroleum Research Center, 2001, p. 283). At yearend, amendments to the 1990 Hydrocarbon Code were being considered by Parliament. Several seismic surveys were planned and petroleum exploration activity in Morocco was expected to increase significantly.

## References Cited

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## Major Sources of Information

- Ministère de l'Énergie et des Mines  
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<sup>1</sup>Where necessary, values have been converted from Moroccan dirhams to U.S. dollars at the average rate of MD9.8=US\$1.00 for 1999.

TABLE 1  
MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/ METALS	1995	1996	1997	1998	1999
<b>Antimony concentrate:</b>					
Gross weight	442	345	350 e/	350 e/	600 e/
Sb content	198	152 e/	160	160 e/	270 e/
<b>Cobalt concentrate:</b>					
Gross weight	4,885	5,033	7,137	2,874	9,488
Co content	537	565	714 r/	287 r/	950 e/
Cobalt recovered from tailings	--	80	220 e/	242 r/	472
<b>Copper:</b>					
Concentrates, gross weight	35,952	37,623	37,344	26,780	25,260
Matte, gross weight	1,933	1,671	2,682	2,841	2,212
Cu content, concentrates and matte	14,100	14,550	15,400	8,200	5,000 e/
Gold e/ kilograms	580	482 4/	450	450	380
<b>Iron and steel:</b>					
<b>Iron ore:</b>					
Gross weight	47,192	11,842	11,965	9,285 r/	6,625
Fe content	31,518	8,257	8,260 e/	6,220 r/	4,440 e/
<b>Metal: e/</b>					
Pig iron	15,000	15,000	15,000	15,000	15,000
Steel, crude	7,000	5,000 r/	5,000 r/	5,000 r/	5,000
<b>Lead:</b>					
<b>Concentrate:</b>					
Gross weight	101,631	107,577	110,507	115,042	114,184
Pb content	67,708	71,667	77,056	79,300	79,798
Cupreous matte, Pb content e/	500	500	500	600	600
<b>Metal:</b>					
Smelter, primary only	62,363	61,749	66,202	65,000 e/	65,000 e/
<b>Refined:</b>					
Primary	59,763	62,700 e/	64,202	60,929	65,209
Secondary e/	2,600	3,100 4/	3,000	3,000	3,000
Total	62,363	65,800	67,202	63,929	68,200
Manganese ore, largely chemical-grade	31,263	29,466	30,806 r/	28,332	29,150
Mercury e/	--	--	5	10	10
<b>Silver:</b>					
Ag content of concentrates and matte kilograms	22,000	19,304	35,000	66,531 r/	51,197
Ag content of mine and smelter bullion do.	182,000	180,291	226,000	240,412 r/	226,692
Total do.	204,000	199,595	261,000	306,943 r/	277,889
<b>Zinc concentrate:</b>					
Gross weight	153,125	152,580	171,796	216,011	216,197
Zn content	79,947	79,662	89,248	112,000	111,703
<b>INDUSTRIAL MINERALS</b>					
Barite	289,308	282,537	338,096	353,438	328,945
Cement, hydraulic thousand tons	6,401	6,585	7,236	7,200 e/	7,200 e/
<b>Clays, crude:</b>					
Bentonite	29,308	39,680	49,633	33,311 r/ 4/	36,528
Fuller's earth (smectite)	15,027	17,223	24,425	27,650	21,956
Montmorillonite (ghassoul)	3,311	3,169	2,933	3,180	2,750
Feldspar	17,233	12,659	15,110	18,332 r/ 4/	1,112
Fertilizers thousand tons	2,100	2,200 e/	2,200 e/	2,132 r/ 4/	2,111
Fluorspar, acid-grade	105,800	95,900	103,800	105,000	83,100
Gypsum e/	450,000	450,000	450,000	450,000	450,000
Mica e/	564 4/	600	600	600	210 4/
<b>Phosphate rock (includes Western Sahara):</b>					
Gross weight thousand tons	20,684	20,855	23,084	23,587	22,767
P <sub>2</sub> O <sub>5</sub> content do.	6,399	6,552	7,848	7,850	7,500
Phosphoric acid do.	2,600 e/	2,583	2,600 e/	2,669 r/	2,696
<b>Salt:</b>					
Rock	137,910	138,290	210,000 e/	107,604	110,000 e/
Marine	42,300	32,530	47,500 e/	40,000 e/	40,000 e/
Talc and pyrophyllite	8,429	13,053	19,850	3,324 r/ 4/	2,975
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, anthracite	649,600	505,600	376,300	269,100	129,200

See footnotes at end of table.

TABLE 1--Continued  
MOROCCO AND WESTERN SAHARA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 3/	1995	1996	1997	1998	1999	
<b>MINERAL FUELS AND RELATED MATERIALS--Continued</b>						
Gas, natural:						
Gross	million cubic meters	25	22	38	43	44
Dry	do.	22	20	35 e/	38 e/	39 e/
Petroleum:						
Crude	thousand 42-gallon barrels	36	35	35	35	35
Refinery products: 5/						
Liquefied petroleum gas	do.	2,800	2,000	2,489	2,617	3,129
Gasoline	do.	3,000	3,000	3,428	3,548	3,842
Jet fuel	do.	1,900	2,000	1,982	2,544	2,213
Kerosene	do.	300	300	481	611	750
Distillate fuel oil	do.	15,000	14,000	17,800	16,667	18,716
Residual fuel oil	do.	12,000	10,000	11,394	12,766	16,706
Other	do.	5,800	5,000	6,000	8,517	5,296
Total	do.	40,800	36,300	43,574	47,270	50,652

e/ Estimated. r/ Revised. -- Zero.

1/ Includes data available through March 15, 2001.

2/ Estimated data are rounded to no more than three significant digits; may not add to totals shown.

3/ In addition to the commodities listed, arsenic trioxide and a variety of crude construction materials are produced; but information is inadequate to make estimates of output levels.

4/ Reported figure.

5/ Refinery fuel and losses have been included in the output of individual products and is estimated to be about 1.8 million barrels per year.